
Valuation of Intellectual Property and Intangible Assets

Gordon V. Smith

Russell L. Parr



WILEY

John Wiley & Sons

New York • Chichester • Brisbane • Toronto • Singapore

Best Available Copy

Material on p. 58 is reprinted with permission. Copyright by Financial Accounting Standards Board, 401 Merritt 7, P.O. Box 5116, Norwalk, Connecticut, 06856-5116, U.S.A. Reprinted with permission. Copies of the complete document are available from the FASB.



Copyright 1989 by John Wiley & Sons, Inc.

All rights reserved. Published simultaneously in Canada.

Reproduction or translation of any part of this work beyond that permitted by Section 107 or 108 of the 1976 United States Copyright Act without the permission of the copyright owner is unlawful. Requests for permission or further information should be addressed to the Permissions Department, John Wiley & Sons, Inc.

This publication is designed to provide accurate and authoritative information in regard to the subject matter covered. It is sold with the understanding that the publisher is not engaged in rendering legal, accounting, or other professional service. If legal advice or other expert assistance is required, the services of a competent professional person should be sought. *From a Declaration of Principles jointly adopted by a Committee of the American Bar Association and a Committee of Publishers.*
ISBN 0-471-61200-6

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

89-136683

Best Available Copy

cost. When an asset is in a business for several years, statements to reflect that it was made. The cost is still be used:

\$5,000 per year

value of this asset is re-fortieth year, it is zero. Actual property are rarely that cost is usually ex-

book of book cost as equivalent property accounting practice. Property disposed of is not in others, property that is appears from the account-also vary widely, and so from company to company. Not to admit it, capital re- "manage" earnings per it "accounting" depreciation. Therefore, even if the tentative of value at some cost is not likely to equal

ce to the appraiser in the n that earnings permitted ion of book cost.

ated environment, useful e for "order of magnitude" must have some knowledge

of the accounting practices of the subject company for even this to be effective.

Tax Basis

This is the same as book value described above except that the calculation of capital recovery is in accordance with tax requirements. Capital recovery is usually calculated by some form of accelerated method, and the life is the result of some legislation rather than being based on actual service life.

Tax depreciation methods and lives have been changed so often and so significantly over the years that tax basis is of no use as a measure of any form of value.

VALUATION TECHNIQUES

Remembering that value can be defined as the present value of future benefits to be derived by the owner of property, a valuation needs only to *quantify* the future benefits and then *calculate* their present value. These future benefits may be in the form of income, as in the case of a security or investment real estate or intellectual property licensed to others; in the form of service, such as the production of goods by process equipment or manufacturing machinery; in the form of use, such as mineral reserves or residential occupancy; or in the form of enjoyment, as in the case of fine arts or jewelry.

For property dedicated to a business enterprise, future benefits are preferably measured in terms of income. There are, however, instances in which we rely upon an alternative measurement of future service, as discussed next.

We include in this discussion of valuation methodologies an explanation of appraisal depreciation as it pertains to value. In a previous section, we have pointed out the distinction between

appraisal depreciation and capital recovery used in accounting. It is very difficult to separate depreciation from valuation, since any attempt to measure future benefits of property ownership carries with it the necessity to quantify how long those benefits are going to last and how much time must pass before they are to be realized. In addition, one must consider how those benefits will be received. For example, will they be great in the early years and then diminish (or vice versa), or will they be equal each year?

Writers about the appraisal process often present the subject as if the calculation of value can be made as one step with depreciation to follow. These steps in fact are not separable, and they must be considered together.

There are three accepted valuation methodologies: cost, income, and market techniques. One can find other methods presented in texts, but some analyses will reveal that other methods are really forms of these three.

Cost Approach

The cost approach seeks to measure the future benefits of ownership by quantifying the amount of money that would be required to replace the future service capability of the subject property. This was defined above as cost of replacement. The assumption underlying this approach is that the *price* of new property is commensurate with the economic value of the service that the property can provide during its life. The marketplace is the test of this equation. If, for example, the price of a new machine were set at a level far above the present value of the future economic benefits of owning the machine, then none would be sold. If the opposite were true, then demand would outstrip supply, and presumably the price would rise. The price of a new machine, absent some market aberration, is therefore equal to its fair market value.

Depreciation

One is rarely called upon to value new property, however, and nearly always brings with it a reduction from (brand-new) value. Appraisal depreciation reflects functional obsolescence, a reflection of all three is essential approach. These factors are

Income Approach

The income approach steps beyond creating a new property and income-producing capability. The primary is that the value of property is the worth of the net economic benefits to be received over the life of the property described by Campbell and

It has often been stated that (whether bricks and mortar or shares) are only as good as they can earn, and the test is earnings when related to the present situation.⁶

In the following discussion, we are familiar with the "time value of money" to be received in the future to be received immediately. This refers to the current value

⁶ Ian R., Campbell, and John R., *Canadian Chartered Accountants*.

Depreciation

One is rarely called upon to render an opinion of value on brand-new property, however, and the use of the cost approach therefore nearly always brings with it the complexity of quantifying the reduction from (brand-new) value due to the action of depreciation. Appraisal depreciation is the result of physical deterioration, functional obsolescence, and economic obsolescence. The proper reflection of all three is essential to estimating value by the cost approach. These factors are discussed in detail in Chapter 8.

Income Approach

The income approach steps away from the cost of constructing or creating a new property and focuses on a consideration of the income-producing capability of the property. The underlying theory is that the value of property can be measured by the present worth of the net economic benefit (cash receipts less cash outlays) to be received over the life of the property. This concept is nicely described by Campbell and Taylor:

It has often been stated, but bears repeating, that assets (whether bricks and mortar, land, equipment, or corporate shares) are only worth in the open market what they can earn, and the true measure of worth is the assets' earnings when related to the risk inherent in the business situation.⁶

In the following discussion, we will assume that the reader is familiar with the "time value of money" and the concept that a dollar to be received in the future is worth less today than a dollar to be received immediately. We will use the term present worth to refer to the current value of money to be received in the future,

⁶ Ian R., Campbell, and John D. Taylor, "Valuation of Elusive Intangibles," *Canadian Chartered Accountant*, May 1972, p. 41.

and the term discount rate to mean the interest factor used in the present worth calculation. The term capitalization rate will be used when the process involves a perpetual income stream.

The three essential ingredients of the income approach are:

1. The amount of the income stream that can be generated by the property
2. An assumption as to the duration of the income stream
3. An assumption as to the risk associated with the realization of the forecasted income

These elements can be related to one another by means of a simple formula, $V = I/r$, where:

- V = Value of the earnings stream attributable to the property
 I = Income derived from employment of the property, representing the net of cash inflows and outflows
 r = Capitalization rate reflecting all the business, economic, and regulatory conditions affecting the risk associated with employing the property and achieving the prospective earnings

For example, if an income of \$100 will be received in perpetuity, and the appropriate rate of capitalization is 10 percent, then the value of that income is:

$$\frac{\$100}{.10} = \$1000$$

This is obviously the simplest of examples and one that never occurs in real life. Property ownership is rarely expected to produce income perpetually. Therefore, the calculation is always more complex, and the determination of an appropriate capitalization rate is more complex as well. Because business property is owned for the express purpose of earning a return on investment, the income approach is the strongest indicator of value for this type of property.

There are a number in the estimation of the from the ownership of : discount rate (risk factor ter 9 and in Appendix A one may be again relyin: depreciation. That is, th may be subject to both The income that they a portionately, and this d tion by the income appr

The income appro following:

1. Contracts
2. Licenses and rc
3. Patents, traden
4. Franchises
5. Securities
6. Business enter

The income appi and without intermed of appraisal depreciati

Market Approach

The market approach stood appraisal techn benefits by obtaining place have judged it t public market and (2)

BUSINESS ENTERPRISE

There are a number of methods that the analyst has to assist in the estimation of the amount of income that can be realized from the ownership of an asset and to estimate an appropriate discount rate (risk factor). These are discussed at length in Chapter 9 and in Appendix A. As to the expected *duration* of income, one may be again relying on a consideration of the three forms of depreciation. That is, the assets that are the source of the income may be subject to both a decline in value and in earning power. The income that they are capable of producing may decline proportionately, and this decline would become part of the calculation by the income approach.

The income approach is best suited for the appraisal of the following:

1. Contracts
2. Licenses and royalty agreements
3. Patents, trademarks, and copyrights
4. Franchises
5. Securities
6. Business enterprises

The income approach indicates fair market value directly and without intermediate calculations involving the three forms of appraisal depreciation.

Market Approach

The market approach is the most direct and the most easily understood appraisal technique. It measures the present value of future benefits by obtaining a consensus of what others in the marketplace have judged it to be. There are two requisites: (1) an active, public market and (2) an exchange of comparable properties.

The residential real estate market is a good example of where these conditions are usually present. There is usually some activity in this market in a given area, and selling, asking, and exchange prices are public. Of course not all residential properties are similar, but given enough activity, reasonable comparisons can be made.

Where these optimal market conditions do not exist, using this approach involves more judgment, and it may become a less reliable measure of value. As we will discuss in Chapter 7, this technique is rarely used for the valuation of intangible assets and intellectual property largely because of the absence of the conditions noted below.

Active Market

The ideal situation is to have a number of property exchanges to use in this analysis. One sale does not make a market. There are, for example, publicly-traded common stocks in which only a few shares are traded in a year. Their exchange price has much less validity as a measure of their value than, for instance, General Motors stock, in which thousands of shares are traded each day. All the other requisites except activity are there.

Public Market

To be useful, the exchange consideration must be known or discoverable. The prices of common stock in the primary exchanges are known in minute detail. For other types of property, it becomes more and more difficult to discover the exchange price. Even with real estate, the published price may be misleading due to financing arrangements between buyer and seller that are not made public. Transactions between businesses, such as the sale of a plant, product line, or subsidiary may be very difficult or impossible to evaluate because competitive pressure motivates the participants to keep the details confidential.

Adjustments for Comparability

The best of all worlds for a property, an arm's-length sale on the street, the day before the sale, and not happen with enough regularity to make adjustments when the "comparable" is not available. Real estate appraisers have a problem of quantifying differences in location, amenities, zoning, size, shape, and age. Sales can be equated to the subject property of value. Analysts using this approach have the same challenge, but it is obvious—one either has it or doesn't.

Adjustments for Time

Sometimes it is necessary to make adjustments contemporaneous with the sale. One must adjust for price changes during a separate study of change during a recent period of time. Indices to use in the adjustment are available.

Summary

With this background, the strengths and weaknesses of the various methods are a good base of information. Similar to the subject, the indicator of value. As the information about them becomes available, the ability makes adjustments more useful. The market approach is the best.

1. Real estate
2. Machinery and equipment